

WATERSHED MANAGEMENT

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*"Rivers are self-formed and
are self-maintained. They
have to meander to be
stable!"*

*By Dave Rosgen, Hydrologist
Wildlands Hydrology*



Teton River

*T*his newsletter is published by the Montana Department of Environmental Quality (DEQ) in an effort to share information with local watershed planning groups. Local groups are encouraged to share their success stories with others working in the state to improve and protect water quality. To publish an article in the newsletter contact Roxann Lincoln at (406) 444-7423.

EPA Approves Salinity TMDL

by Carole Mackin, DEQ

The Environmental Protection Agency (EPA) approved a total maximum daily load (TMDL) for the flow of saline water into the Teton River from Freezeout Lake Wildlife Management Area operated by the Montana Fish, Wildlife & Parks (MFWP) in Teton County. The approval letter recognized the Teton River Watershed Group as a focal point for public education and information in the watershed, and a key factor in effectively presenting the draft TMDL to community members and taking public comment during its annual meeting last January.

The voluntary and incentive-based TMDL sets a maximum load for salinity to protect aquatic life in the

Teton River. In order to meet the TMDL goal, MFWP monitors the flow and natural salinity of the river upstream of the outlet. The salinity of the lakes is measured and the outflow adjusted to keep the concentration of total dissolved solids in the Teton from going over 700 parts per million.

This TMDL will serve as an example for other locations around the state where water in a shallow impoundment can concentrate minerals through increased evaporation. Drainage of this water into a stream can cause sudden shifts in salinity that are hard for aquatic life to accommodate. In addition, unexpected increases in the salinity of irrigation water can destroy a crop. A TMDL can ensure that the salinity levels will remain relatively constant throughout the irrigation season.

Shields River Watershed Association

by Roxann Lincoln, DEQ

The Shields River Watershed Association was formed in the fall of 1997 in response to landowner's interest in their watersheds. The association works in conjunction with the Park Conservation District. The watershed project encompasses the upper Shields River, Antelope Creek, Cottonwood Creek, Potter and Elk creeks.

The group has completed an aerial assessment and identified resource concerns. Some of the issues of concern are noxious weed control, water quantity, water quality, irrigation efficiencies and cutthroat trout populations. A geographic information system (GIS) base map of noxious weed occurrence and distribution has been produced. The group has also drafted a resource planning document.

The following agencies provide technical and financial assistance to the Association: U.S.D.A. Natural Resource Conservation Service, Montana Department of Environmental Quality, Montana Department of Natural Resources and Conservation, U.S.D.A. Forest Service, Montana Fish, Wildlife & Parks, U.S. Fish & Wildlife Service, Park County Weed District and Park Conservation District.

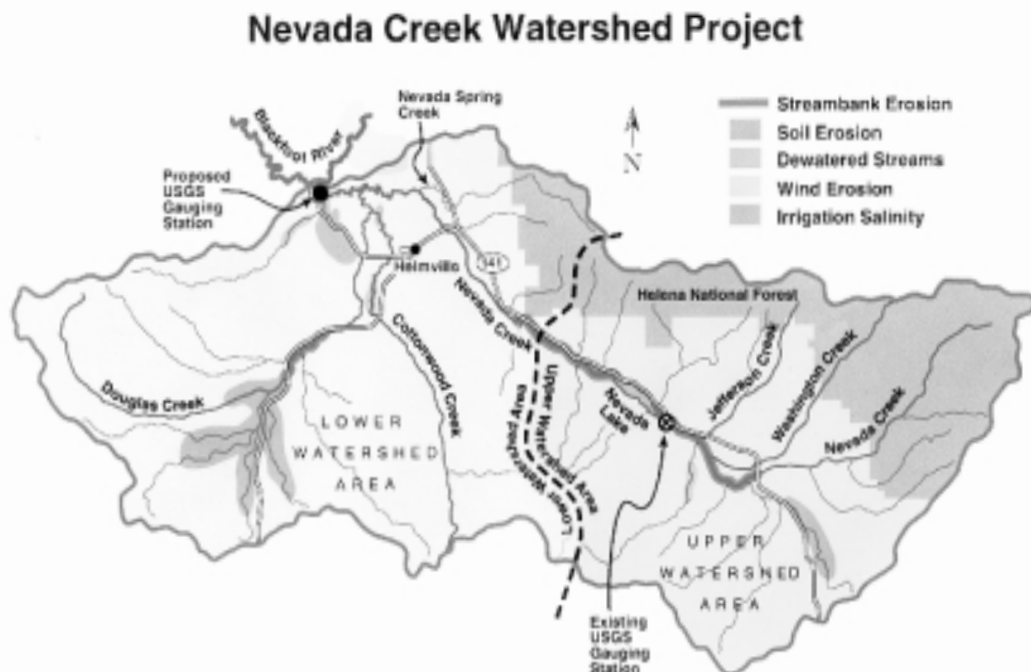
The Association received a \$10,000 grant from DEQ in 1998 to complete resource assessments, prepare aerial photos of selected tributary reaches, and to initiate several demonstration projects. Part of the funds were also used for educational projects and support for planned watershed activities. The Association has applied to the Noxious Weed Trust Fund for an additional grant to assist with accomplishing their goals. A **Future Fisheries** grant and **WHIP** funding have been pursued to develop a group off-stream livestock watering project and to protect wetlands.

The Shields River Watershed Association is a good example of local landowners taking the initiative to make important resource decisions which affect their livelihood. For more information contact the Association chair, Steve Tomshin at (406) 578-2110 or Vicki Sullivan of DEQ at (406) 444-7425.

Nevada Creek Watershed Improvement Project

by Roxann Lincoln, DEQ

The Nevada Creek Watershed Improvement Project was begun in 1995 and sponsored by the North Powell Conservation District. The project is a water quality improvement project designed to address nonpoint source pollution in the watershed.



The primary goals of the project were to improve water quality and fisheries habitat. The project implemented BMPs and grazing management strategies to reduce sediment from bank erosion. Of 13 tributaries to the Blackfoot River, Nevada Creek was listed as the third highest contributor of sediment.

Nevada Creek originates on the western slopes of the Continental Divide at an elevation of 7700 feet in the mountains. The stream flows west through mountain foothills and into alluvial deposits of the wide valley bottom at an average elevation of 4260 feet between Avon and Helmville. The creek's headwaters are within the Helena National Forest and it flows through private ranches in the valley bottom.

Resource inventories have been conducted and management plans developed for 75,350 acres in the watershed. The goal is to complete these tasks for 100,000 acres. Currently, the following BMPs have been implemented: installation of 37,736 feet of fencing, 7 spring developments installed, 4 stock water wells installed, 26 stock water tanks and 27,000 feet of associated pipelines installed; 1,151 feet of streambank stabilization conducted, 1 irrigation diversion with fish ladder installed and the fencing of 2 feedlot/concentrated animal operations. Lastly, grazing management plans have been implemented by 10 landowners along the creek.

To accomplish these tasks the North Powell Conservation District has worked with local landowners, the USDA Natural Resources Conservation Service, U.S. Fish and Wildlife Service, the Montana Fish, Wildlife & Parks, Trout Unlimited, the Blackfoot Challenge, the U.S. Geological Survey, the Bureau of Land Management, Montana DNRC, Montana DEQ, and the Nevada Creek Water Users Association.

The North Powell CD has plans to extend the project to address issues in Lower Nevada Creek, Douglas Creek and Cottonwood Creek.

Stream Assessments

by Tom Pick, NRCS/DEQ

The term assessment is often used by agencies to describe a written evaluation of all that is known about a resource(s) in a given geographic area such as a watershed. As such, it is often the first step in developing a strategy or plan of attack since it can tell us what information we need.

Assessment as used here is a field-oriented process to collect targeted information about the stream or other body of water.

The process can be applied to other resources and geographic areas.

Why do stream assessments? 1) Stream assessments provide general information that can be used by landowners concerning management practices. 2) They can be used as a management priority setting tool for decision makers concerning long range plan development, conservation needs, etc. 3) Assessments can provide self-direction for locally led community activities. 4) An important use of assessments is baseline data for restoration efforts, a starting point from which to measure success. 5) Many funding sources ask for a description of the problem and assessments can provide this information.

There are several types of assessments. The following is a brief description of types of assessments commonly conducted:

Stream walks - really an inventory of the stream corridor. An intensive type of assessment where very specific quality and quantity information is collected and mapped.

Reach assessments - a quick overview of the stream corridor resources to determine general condition, and cause and effect relationships using an assessment plan and criteria developed to rate condition.

Remote sensing - comparison of aerial photos or other base maps to rate condition or trend with field checks to establish ground truth. This method is not as good for establishing cause and effect relationships.

Aerial assessments - used with or without GPS/GIS instrumentation to quantify values. Fixed wing or rotor aircraft can be used. Video coverage provides information for future reference. This method is more expensive but provides good coverage for large watersheds.

Any assessment effort is custom tailored to the nature of the water body and the purpose(s) or desired uses of the information identified by the participants and sponsors.

Natural Stability Concepts

by Dave Rosgen, Applied River Morphology

Natural stream channel stability is achieved by allowing the river to develop a stable dimension, pattern, and profile such that, over time, channel features are maintained and the stream system neither aggrades nor degrades. For a stream to be

stable it must be able to consistently transport its sediment load, both in size and type, associated with local deposition and scour. Channel instability occurs when the scouring process leads to degradation, or excessive sediment deposition results in aggradation. When the stream laterally migrates, but maintains its bankfull width and width/depth ratio, stability is achieved even though the river is considered to be an "active" and "dynamic" system.

The consistency of dimension, pattern, and profile that exists among rivers is more than chance or spurious correlation. Mathematical relations exist illustrating a stratification of river systems by unique morphological forms, that provide meaning in an otherwise random appearing, complex set of interrelated variables. Whenever proper attention to the "rules of the river" is not respected, adverse channel adjustments often result in damage to personal property and loss of life.

The Watershed Protection Approach

Adopted from EPA's "Watershed Protection: A Project Focus"

The Watershed Protection Approach is a strategy for effectively protecting and restoring aquatic ecosystems and protecting human health. This strategy has as its premise that many water quality and ecosystem problems are best solved at the watershed level rather than at the individual discharger level. The Watershed Protection Approach has four major features: 1) targeting priority problems, 2) a high level of stakeholder involvement, 3) integrated solutions that make use of the expertise and authority of multiple agencies, and 4) measuring success through monitoring and other data gathering.

The Watershed Protection Approach accommodates the management of ecosystems and human health at three levels: the state, the basin, and the watersheds within each basin. Some issues are best addressed at the watershed level, such as controlling nutrient loading to small lakes or restoring headwaters riparian habitat quality. Other issues may be best addressed at the basin level, such as phosphate bans, wetlands mitigation banking, or nutrient trading. Still other activities and solutions are best implemented at the state level, including policies on toxics control or the operation of permit programs.

Watershed projects are an important component of the Watershed Protection Approach. Watershed projects promote understanding of the full range of stressors in a watershed - physical, chemical, and biological - that may be affecting aquatic life and human health. When all significant sources and

stressors are understood, agencies are better able to focus on those controls that are more likely to produce measurable improvements in ecosystem health.

Administratively, watershed projects can be highly efficient. They encourage organizations to focus staff and financial resources on prioritized geographic locations and facilitate coordination of resources among interested parties. Also, they provide local agencies with an opportunity to take leadership roles in ecosystem protection.

Finally, watershed projects encourage local agencies and citizen groups to get involved - either by participating in state or federal projects or by starting their own projects.

For more information contact your local TMDL Coordinator:

Roxann Lincoln	Westslope	444-7423
Vicki Sullivan	Upper Missouri	444-7424
Carol Mackin	Lower Missouri	444-7425
Vacant	Yellowstone	

When in Rome

by Carole Mackin, DEQ

The age-old advise "*When in Rome, do as the Romans do*" is applicable to the watershed approach to doing TMDLs. This was re-emphasized in May by Bruce Zander of EPA Region VIII. Two streams may be similar in their character and problems, yet the EPA-approved TMDLs may look very different. The watershed approach ensures that the methods used to address the problems and gauge the success of the TMDL reflect the programs and expertise that already exist in the watershed.

In a watershed where public lands predominate, the assessment may evaluate all the land uses in the watershed and the ability of the stream to maintain proper function and condition. The measure of success may include interpretation of habitat, channel or water quality response that requires specialists in a variety of fields.

In a similar watershed where private land predominates, the expertise in the watershed may center around an active Audubon or Trout-Unlimited chapter, volunteer water quality monitors, or a variety of civic-minded groups. Here, a TMDL can be set up to use their skills and interests. For instance, volunteer birdwatchers could monitor the nesting population of redwing blackbirds to gauge the success of stream bank stabilization using willow cuttings.

The possibilities for appropriate TMDLs are as varied as the people, interests and resources found in the watershed. The watershed approach allows those who wish to be involved to shape the TMDL so it is beneficial to both the stream and the community.

Wildlife Friendly Grazing Systems

by Peter Husby, NRCS

How can we make sure that *Prescribed Grazing* really does benefit wildlife? The first step is to identify which wildlife species we intend to benefit. There is no such thing as "wildlife habitat." Habitat requirements are species-specific. No self-respecting mountain plover would think of nesting in good bobolink habitat. The average pintail wouldn't be too comfortable nesting in optimum gadwall nest habitat.

Wildlife-friendly grazing systems minimize adverse social interactions between wildlife and livestock. Deer and elk, for example, tend to avoid the pasture where the cow herd is grazing. Grazing systems that concentrate livestock for shorter grazing periods allow wildlife to return to the pasture sooner than systems having long grazing periods.

Wildlife-friendly grazing systems incorporate long enough rest periods to allow buildup of residual cover (litter). Many ground-nesting bird species rely on old grass cover to supplement cover provided by current year's growth. Rest rotation is a common application used to provide residual cover. A one year rest rotation may not be adequate to allow full recovery of grazed plants following concentrated grazing. Deferment of use into the second growing season following grazing may be necessary to provide residual cover.

Wildlife-friendly grazing systems maintain or improve riparian habitat. Riparian pastures, off-stream stock water, herding, exclusion, salting practices, time and timing of grazing, are used

to allow for complete development of all age and size classes of riparian vegetation.

Grazing management can be used to enhance both livestock and wildlife production. Just to summarize a few general characteristics of wildlife-friendly grazing systems:

- > Livestock are generally concentrated to achieve shorter grazing periods and more even forage utilization.
- > Rest periods are long enough to allow complete recovery of grazed plants plus litter buildup.
- > Riparian habitat is given special consideration during planning, inventory and implementation.
- > Special wildlife needs are taken into account such as avoiding grazing of some areas during the nesting season, keeping livestock away from prairie grouse leks during the breeding season, and using livestock to create special habitats needed by wildlife.

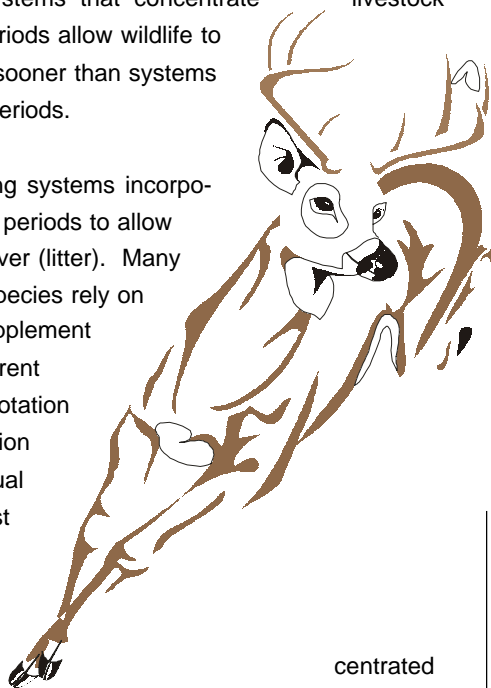
DEQ Activities Update

Dave Martin, the TMDL Planning Coordinator for the Upper Missouri Area, has left DEQ and taken a position with the Department of Natural Resources and Conservation. Vicki Sullivan, the TMDL Planning Coordinator for the Yellowstone Area, has taken Dave's position as the planning coordinator for the Upper Missouri Area. The TMDL Planning Coordinator for the Yellowstone Area is being announced within DEQ.

DEQ TMDL staff met with Bruce Zander of EPA Region VIII on May 11th. The group discussed requirements for submitting TMDLs and updates from EPA.

DEQ staff conducted their annual field monitoring training session on May 18th. Training on proper sampling techniques and protocol for water chemistry sampling, macroinvertebrate sampling and periphyton were demonstrated. Other stream monitoring techniques such as Wolman pebble counts, stream cross-sections and photo-points were also demonstrated.

DEQ received 21 proposals for supplemental 319 grants. The request for funding totaled over a million dollars. DEQ was able to fund 11 of the proposals received. The funds available for distribution was \$290,000. Projects funded had a close connection with development of a TMDL for an impaired water body.



Publications

1. *Cattlemen's Information Guide to Water Quality* is a publication available from the National Cattlemen's Beef Association. The guide is organized to provide information for involvement at the cattle operation level, watershed management level, with policy formation. It also includes sources for help and lists of additional resources available. For a copy write to the association at:

1301 Pennsylvania Avenue, N.W., Suite 300
Washington, D.C. 20004-1701

2. *Top 10 Watershed Lessons Learned 1997*

This document is produced by EPA and contains information on what works in watershed planning and what doesn't. It is based on the experiences of watershed practitioners across the country. It contains information on professional contacts, case studies, tips from practitioners, and water-related publications.

The document can be found on the web at www.epa.gov/owow/lessons. Or you can obtain a copy from Ben Ficks, U.S. EPA Office of Wetlands, Oceans, and Watersheds, 401 M Street, SW, 4501F, Washington, DC 20460 or phone (202) 260-2529.

3. *Stream Corridor Restoration - Principles, Processes and Practices 1998*

This comprehensive manual is developed by the Federal Interagency Stream Restoration Working Group. It provides broad technical guidance on the restoration process and alternatives for individual restoration projects. The manual is published in a notebook format to allow for easy replacement of pages as updates occur. The application and effectiveness of numerous stream restoration practices can be found in the appendices. The document is available from NTIS in paper copy or on CD-ROM. To order, call the NTIS Sales Desk at 800-553-6847 or visit their website at www.ntis.gov.

